



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Admin.  
NATIONAL OCEAN SERVICE  
Damage Assessment Center  
Florida Keys National Marine Sanctuary

## **Addendum to *Myra Lee* Grounding Incident Report**

**DISCUSSION:** This addendum is to clarify methodologies used in the assessment of the *Myra Lee* injury site as well as include habitat data that was absent in the original report. The area measurements given in the original report were determined using the following method. The habitat data was collected during the original assessment using the techniques described below.

### **METHODOLOGIES**

Utilizing differentially corrected, surveying-grade DGPS equipment (Trimble® Pro XR with a TSC1 Datalogger), the grounding site was mapped by physically tracing the outline of the injury. The coordinates generated by the tracing work were downloaded to GPS Pathfinder® Office data processing software version 2.70 (Trimble) and then to Arcview® GIS version 3.2a (ESRI), which is used to arrive at square meter area calculations for the injury features. Photographs of the injury were made using a Sony® DCR-TRV900 digital video camera.

Community composition, percent cover and density of the benthic community, both in the injured area and in the surrounding undisturbed area, were assessed using a modified Braun-Blanquet technique (Kenworthy and Schwarzhild, 1997; Braun-Blanquet, 1932). This method involves placement of a 0.25m<sup>2</sup> quadrat on the substrate. The submerged aquatic vegetation (seagrass and macroalgae) and/or coral are identified by species and assigned a cover-abundance scale value. The scale values are: 0.0 = not present; 0.1=solitary specimen; 0.5=few with small cover; 1=numerous but less than 5% cover; 2=5-25% cover; 3=25-50% cover; 4=50-75% cover; and 5=75-100% cover. In order to determine the percent cover per individual species, as well as the total seagrass cover, the Braun-Blanquet scores by species and total cover are averaged over all of the quadrats assessed within each feature (injured area and undisturbed area). The point estimates of percentage cover corresponding to these average Braun-Blanquet scores are then calculated using the attached conversion table (see Appendix C). The overall percent loss of seagrass per species as a result of the grounding can then be assessed by comparing the percent cover of the injured area to that of the undisturbed area immediately adjacent to the injury.

### **HABITAT ANALYSIS AND COMPOSITION**

Using the Braun-Blanquet technique, two species of seagrass were noted within the injury (see Table 1). None of the species comprised greater than 1% of the bottom cover (see Table 2). The same two species of seagrass were also found in the undisturbed grassbed outside the injury. The seagrass bed was predominately *Thalassia testudinum* (Turtle Grass) with an average percent cover of 10.00%.

Table 1. Summary of Raw Braun-Blanquet Scores (See Braun- Blanquet scores in Appendix B)

Density <sup>1</sup>	Species	Control	Berm Scar	Blow Hole
	<i>T. testudinum</i>	1.60	0.13	0.00
	<i>H. wrightii</i>	0.97	0.11	0.20
	<i>S. filiforme</i>	0.00	0.00	0.00

1) Density =  $D_i = \text{SUM} (S_{ij}/n)$

$D_i$  = density of species i

j = quadrat number

$S_{ij}$  = BB score for species i in quadrat j

n = total number of quadrats in transect

Table 2. Braun - Blanquet Scores converted into percent cover. (See Conversion Table in Appendix C)

Percent Cover	Species	Inside Injury	Surrounding Habitat
	<i>T. testudinum</i>	1.00 %	10.00 %
	<i>H. wrightii</i>	1.00 %	2.05 %
	<i>S. filiforme</i>	0.00 %	0.00 %
	<b>TOTAL</b>		<b>12.05%</b>

## REFERENCES

Braun-Blanquet, J. 1932. *Plant Sociology*- the study of plant communities. G.B Fuller and H.S Conrad, Eds. Koeltz Scientific Books. Koenigstein. West Germany.

Kenworthy W.J. and A. Schwarzchild. 1997. Vertical growth and short shoot demography in *Syringodium filiforme* in outer Florida Bay, USA. Marine Ecology Progress Series. vol 173. pp. 25- 37.

## Appendix A: *Myra Lee*: Braun-Blanquet Damage Assessment and Habitat Characterization

### Percent Cover and Services Lost

Species	Category	Relative Percent of Individual Seagrass Species	Percent Cover in Control Site	Percent Cover Remaining in Trench Scar	Percent of Services Lost in Trench Scar	Percent Cover Remaining in Berm Scar	Percent of Services Lost in Berm Scar
<i>T. testudinum</i>	Density	82.99%	10.00%	1.00%	9.00%	1.00%	9.00%
<i>H. wrightii</i>	Density	17.01%	2.05%	1.00%	1.05%	1.00%	1.05%
<i>S. filiforme</i>	Density	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total		100.00%	12.05%				

### Average Braun-Blanquet Scores

Species	Category	Control	Trench Scar	Blow Hole
<i>T. testudinum</i>	Density	1.60	0.13	0.00
<i>H. wrightii</i>	Density	0.97	0.11	0.20
<i>S. filiforme</i>	Density	0.00	0.00	0.00

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## Appendix B: *Myra Lee*: Braun-Blanquet Scores

Quad #	Injury	<i>T.t.</i>	<i>S.f.</i>	<i>H.w.</i>	Other	Total Grass	TMA	CORAL	IB/OB	Sed. Type
1	C	0.5	0.5	0		1	1	1	OB	HH
2	C	1	0.5	0		2	0	1	OB	HH
3	C	1	1	0		2	1	1	IB	HH
4	C	2	1	0		2	2	0	IB	HH
5	C	2	0.5	0		2	2	2	OB	HH
6	C	0.5	1	0		1	1	1	OB	HH
7	C	1	1	0		2	1	1	IB	HH /R
8	C	2	1	0		2	2	1	IB	HH /R
9	C	1	1	0		2	2	0	OB	HH
10	C	1	1	0		2	2	0	IB	HH
11	C	2	1	0		2	1	0		HH
12	C	3	1	0		3	2	0		HH /R
13	C	3	2	0		3	1	0		HH
14	C	2	1	0		2	1	0		HH
15	C	2	1	0		2	2	0		HH
<b>Average</b>		<b>1.60</b>	<b>0.97</b>	<b>0.00</b>		<b>2.00</b>	<b>1.40</b>	<b>0.53</b>		
16	BH	0	0	0		0	0	0		HH /R
17	BH	0	0	0		0	0	0		HH
18	BH	0	0	0		0	0	0		HH
19	BH	0	0.1	0		0.1	0	0		HH
20	BH	0	0	0		0	0	0		HH
<b>Average</b>		<b>0.00</b>	<b>0.02</b>	<b>0.00</b>		<b>0.02</b>	<b>0.00</b>	<b>0.00</b>		
21	TR	0	0	0		0	0.1	0	IB	HH
22	TR	0	0	0		0	1	0	OB	HH
23	TR	0.5	0.5	0		0.5	1	0	OB	HH
24	TR	0	0	0		0	0.1	0	IB	HH
25	TR	0.1	0.50	0		0.5	0.1	0	IB	HH
26	TR	0	0	0		0	0	0	OB	HH/CR
27	TR	0.1	0.1	0		0.5	0.5	0	IB	HH
28	TR	0.5	0	0		0.5	0	0	IB	HH
29	TR	0.1	0	0		0.1	0	0	OB	HH
30	TR	0	0	0		0	0.5	0	OB	HH
<b>Average</b>		<b>0.13</b>	<b>0.11</b>	<b>0</b>		<b>0.21</b>	<b>0.33</b>	<b>0</b>		

### KEY TO ABBREVIATIONS

#### Species:

*T.t.* = *Thalassia testudinum*

*S.f.* = *Syringodium filiforme*

*H.w.* = *Halodule wrightii*

TMA = Total Macroalgae

#### Sediment Types:

LC = Live Coral

MS = Muddy Sand

SM = Sandy Mud

R = Rock

#### Injury Regions:

M= Mud

CS = Coarse Shell

HH = Halimeda Hash

CR = Coral Rubble

TR = Trench

BH = Blow Hole

BM = Berm

C = Control (Reference)

## Appendix C: Braun-Blanquet Score to Percent Cover Conversion Tables

Interpolation of the Mid-Point of BB Scores			
BB Score	% Cover	BB Score	% Cover
0.00	0.00%	2.60	28.50%
0.10	1.00%	2.70	30.75%
0.20	1.00%	2.80	33.00%
0.30	1.00%	2.90	35.25%
0.40	1.00%	3.00	37.50%
0.50	1.00%	3.10	40.00%
0.60	1.00%	3.20	42.50%
0.70	1.00%	3.30	45.00%
0.80	1.00%	3.40	47.50%
0.90	1.00%	3.50	50.00%
1.00	2.50%	3.60	52.50%
1.10	3.75%	3.70	55.00%
1.20	5.00%	3.80	57.50%
1.30	6.25%	3.90	60.00%
1.40	7.50%	4.00	62.50%
1.50	8.75%	4.10	65.00%
1.60	10.00%	4.20	67.50%
1.70	11.25%	4.30	70.00%
1.80	12.50%	4.40	72.50%
1.90	13.75%	4.50	75.00%
2.00	15.00%	4.60	77.50%
2.10	17.25%	4.70	80.00%
2.20	19.50%	4.80	82.50%
2.30	21.75%	4.90	85.00%
2.40	24.00%	5.00	87.50%
2.50	26.25%		

BB Score	Mid-Point Range
<1= <1%	<1= 1%
1=1%-5%	1=2.5%
2= 5%-25%	2=15%
3= 25%-50%	3=37.5%
4= 50%-75%	4=62.5%
5= 75%-100%	5=87.5%